



Princess Nora Bint Abdul Rahman University

College of Medicine

I have a swelling in my neck

Tutor Guide

Tutorial-1

Tsetse

Trigger

40 minutes

Rola Ibrahim a 33-year-old school teacher presents to Internal Medicine Department of Kingdom Hospital with complaints of fatigue, weakness and excessive sleepiness in day time for the last 7 to 8 months. She told the attending doctor that recently she has gained weight markedly and she also notices bilateral swelling of her feet as her shoe size has increased. Rola has also observed a swelling in the neck for the last 2 to 3 months. Though she was having all these vague symptoms for a long time but the neck swelling is the main complaint that has distracted her mind.

Discussion Questions:

- Find out the meaning of difficult words.
- List the key information about Rola.
- Identify Rola's presenting problems and generate hypotheses
- What further information would you like to ask in history to help you differentiate between your hypotheses?

Hypothesis

Fatigue	Weakness	Sleepiness	Weight gain	Swelling feet	Swelling neck
Anemia, iron deficiency	Anemia, malnutrition	Narcolepsy	↑ Caloric intake	CCF right sided	Skin abscess
Diabetes, COPD, CCF, CRF	Hypothyroidism, DM, Cushing, addison's disease hyperparathyroidism	Insomnia d/t any cause limiting night sleep	Fluid retention in CCF, cirrhosis	Pericardial effusion, pericarditis, cirrhosis	Parotitis, goiter, thyroiditis, thyroid tumor
Hypothyroidism, adrenal insufficiency	Chronic lung & heart disease, stroke, spinal cord lesion	Hypothyroidism	Cushing's syndrome hypothyroidism	tricuspid regurgitation, tricuspid stenosis	Lymphoma, reactive lymphadenopathy e.g pharyngitis, tuberculous
Cancer, autoimmune disease	Myasthenia grav, botulism, myopathy,	Primary CNS Hypersomnolence	Polycystic ovary, pregnancy, menopause	Pulmonary stenosis, cor pulmonale, myxedema	Branchial cleft cyst, thyroglossal duct cyst
Sleep apnea, chronic fatigue syndrome	Multiple sclerosis, polymyositis, osteomalacia	Inadequate sleep time	Syndrome X, insulinoma	Venous, lymphatic obstruction,	Metastasis of squamous cell carcinoma in mouth, pharynx, larynx
Alcoholism, depression	Electrolyte imbalance	Depression	Lack of growth H, leptin	↓ albumin, malnutrition, cellulitis	Metastatic thyroid cancer

Drugs: sedatives, beta blockers	Drugs: steroid, statin, clofibrate, chloroquin	Drugs: opiates, sedatives	Genetic syndrome of obesity	Drugs: vasodilators, calcium blocker, NSAID	Carotid artery aneurysm, carotid body tumor
---------------------------------	--	---------------------------	-----------------------------	---	---

HISTORY

40 minutes

Rola is also experiencing frequent muscle cramps and always feels cold. Moreover she is unable to concentrate on teaching and to pay attention to her students because she feels tired all the time. On being questioned Rola indicates that she has infrequent bowel movements ✓ and suffers from headaches off and on. Replying a question, Rola informed that she is a resident of Riyadh and never lived in any hilly region.

She further told the doctor that she wants to have a third child but could not conceive. She consulted a gynecologist who advised her to see an endocrinologist to treat the cause of neck swelling and fatigue first.

Past medical history:

She developed same complaints of weakness, fatigue and sleepiness after delivery of her second daughter but recovered within a year's time

Family history:

Her father has type 2 diabetes and her mother has rheumatoid arthritis. Her two brothers and a sister are healthy

Socio-economic history:

Satisfactory

Personal history:

She is married 9 years back and has two daughters 7 and 5 years old. Her husband is a civil engineer in a construction company.

Discussion Questions

- List the difficult words you do not understand and find out their meanings.
- Summarize the key information in this progress
- Identify any new problem and make a list of hypotheses
- What clinical examinations and investigations would you like to do for diagnosis of this patient?

List of hypothesis

Muscle cramps	Feels cold (Hypothermia)	Unable to concentrate	Constipation	Headache
Idiopathic	Cold exposure	Depression	Poor bowel habit	Meningitis
DM, hypoglycemia, pregnancy Parkinson disease	Infections, hypoglycemia, hypothyroidism, Adrenal insufficiency	Drugs: sedatives, anti cholinergic, antipsychotic, opioids	Inadequate fluid or fiber intake, hypothyroidism, hyperparathyroid	Subdural hemorrhage, Subarachnoid hemorrhage
Peripheral neuropathy	Anorexia, malnutrition	Hypothyroidism	DM, porphyria, eating disorders	Glaucoma, refractive error
Dehydration, hypokalemia, hypocalcemia, hyponatremia	Burns, Spinal cord injury	Vitamin B or thiamine deficiency	Hypercalcemia, hypokalemia, uremia, typhoid	Hypertension, cerebral ischemia, Brain tumors, brain abscess, Migraine
Hypothyroidism	Effect of drugs	Delirium	Sacral nerve damage, paraplegia	Caffeine, alcohol or drug withdrawal, post lumbar puncture
Alkalosis	Altered mental status		Rectal prolapse, rectal stricture, colonic mass, IBS Hirschsprung dis,	Head injury, tension headache, dental abscess, otitis media
Spinal cord or muscle injury			Drugs: narcotics, diuretics, Calcium blocker, iron anticholinergic,	Trigeminal neuralgia

Facilitation Questions:

Q: Why doctor asked Rola about living in Hilly area?

At mountainous or hilly region, iodine deficiency occurs thus hypothyroidism is more common in these areas

Q: What is the importance of past medical history?

Rola developed post-partum thyroiditis in which there is a phase of hyperthyroidism followed by hypothyroidism with the same symptoms described above. Patient recovered within a year, but these patients are more prone to develop Hashimoto's thyroiditis later on. This post-partum hypothyroidism may be a result of increased immune function following suppression of its activity during pregnancy.

Q: What is significant in family history?

Both parents have autoimmune disease; father had diabetes and mother has rheumatoid arthritis.

Q: Mostly people don't have these symptoms. What is the probable cause of Rola's condition?

Majority of complaints were related to slowing of metabolic activities in the body. All these symptoms point towards hypothyroidism a very important hormone responsible for normal metabolic activities. As hypothyroidism progresses, there may be puffiness around the eyes, bradycardia, a drop in body temperature and heart failure occurs.

In most severe form it may lead to life threatening coma (myxedema). In a severely hypothyroid individual myxedema coma is triggered by severe illness, surgery, stress, or traumatic injury. Condition required hospitalization and immediate treatment with thyroid hormone.

Q: Why Rola was unable to conceive third time?

Hypothyroidism also leads to infertility.

Clinical examination

30 minutes

Vital signs

BP: 120/95 mmHg
R/R: 16/minute
BMI: 31

Pulse: 50/minute
Temp: 36.0° C

Q: Interpretation of vital signs:

Diastolic hypertension
Bradycardia
Body temperature low
BMI high (obesity)

General Examination: An overweight female, well oriented in time and space.

- Her skin is pale, dry and rough. Hairs are brittle ✓
- Puffy face with peri-orbital edema
- Peripheral edema of feet: typically non pitting ✓

← Examination of Thyroid: Enlarged non-tender Thyroid gland 4x4 cm in size which moves on swallowing

Q: What is the cause of edema feet?

Edema feet is caused by interstitial accumulation of gel like hydrophilic mucopolysaccharide, leading to fluid retention and lymphedema

Q: What does examination of thyroid gland show?

Thyroid was diffusely enlarged and swelling is seen moving with act of swallowing

Systemic examination

CNS: Sensory system intact

Motor system: slow speech, ataxia, diminished deep tendon reflexes

Classic prolonged relaxation phase of ankle jerk

Q: Explain CNS examination.

Slow speech, ataxia all due to decrease metabolism

Ankle jerk delayed relaxation phase is a classic diagnostic sign of hypothyroidism

CVS: S1, S2 audible, Bradycardia, no murmurs

Respiratory system: Normal vesicular breathing, no added sounds

Abdomen: normal on examination

After history and clinical examination, Rola is referred to an Endocrinologist Dr. Abeer for proper investigations and treatment. She is advised following tests:

- Complete blood count (CBC)
- Urine DR
- Lipid profile
- Random blood glucose level
- RA factor
- X-ray chest
- Thyroid profile:
 - Serum TSH
 - Serum Thyroxine (T4)
 - Serum Triiodothyronine (T3)
 - Serum free T4 and T3
 - Thyroid autoantibodies (Anti-TPO, Anti-TG, anti-TSH receptor)
- Thyroid scan

Discussion Questions

- Interpret the findings of vital signs and general examination
- Discuss the rationale of investigations advised to Rola.

Rationale of investigations

-CBC and Urine DR (detailed report) are routinely done tests

CBC is important as anemia is suspected; moreover pernicious anemia can also be ruled out by this test

-Lipid profile was asked to assess high levels of cholesterol, triglycerides and LDL

-**RBS and RA factor** were advised because there are chances of other autoimmune diseases associated with Hashimoto's thyroiditis; in addition family history of these diseases were also present

-**Chest X-ray:** to observe extension of thyroid enlargement retro-sternally

-**Serum TSH** if high it is most useful test (more TSH released by pituitary when T3 and T4 are low). Increase in TSH actually precedes the fall of thyroid hormones to low level by months and years.

TSH level would be low in pituitary or hypothalamic disorders; called secondary thyroid disease (pituitary) or tertiary (hypothalamic)

-**Low total T4** or free T4 in presence of elevated TSH confirms the diagnosis of primary hypothyroidism

-Presence of **anti-TPO (anti-thyroperoxidase) and anti-TG (anti-thyroglobulin) antibodies** confirms the diagnosis of Hashimoto thyroiditis. However 10-15% patients are antibody negative

-**Thyroid scan:** as thyroid gland was diffusely enlarged, thyroid scan confirmed the diagnosis.

If a nodule is present in thyroid gland, then **fine needle aspiration (FNA)** is done to differentiate between hot and cold nodule

Facilitation Questions

Q: What is the difference between T3 and T4?

T4 is secreted in large amounts, is more stable being bound to plasma proteins in greater proportion. T4 is an extracellular hormone which is converted into T3 within the cells thus it acts as prohormone.

T3 is much more potent than T4 in all hormonal actions including feedback inhibition of TSH.

Q: Which test in thyroid profile is most important in diagnosing hypothyroidism?
Serum TSH level (as explained above)

Q: Which other autoimmune diseases can be associated with Hashimoto?

- | | |
|-----------------------------|------------------------------|
| 1. Addison's disease | 2. Diabetes mellitus |
| 3. Pernicious anemia | 4. Rheumatoid arthritis |
| 5. Hypoparathyroidism | 6. Primary biliary cirrhosis |
| 7. SLE | 8. Scleroderma |
| 9. Chronic active hepatitis | 10. Hypogonadism |